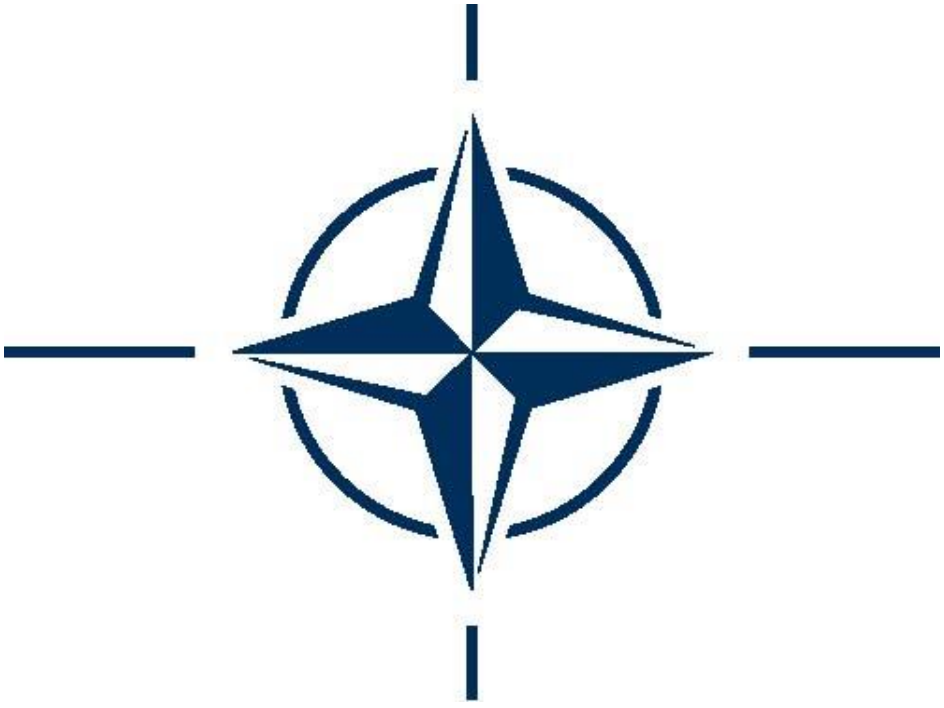
NATO STANDARD

AJP-4.7

ALLIED JOINT DOCTRINE FOR PETROLEUM

Edition B Version 1

OCTOBER 2017



NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

17 October 2017

1. The enclosed Allied Joint Publication AJP-4.7 Edition B, Version 1, ALLIED DOCTRINE FOR PETROLEUM, which has been approved by the nations in the Military Committee Joint Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2536.

2. AJP-4.7, Edition B, Version 1, is effective upon receipt and supersedes AJP-4.7, Edition A, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
DEU	DEU appreciates the value and quality of the information in the AJP-4.7 RD. However, the Logistic Committee Standardization Working Group and the Logistic Committee Executive Board (Standardization) remarked before the RD was circulated that the draft AJP-4.7 does not meet the nature for a Level 2 doctrine (operational-level guidance for the joint commander and staff on operations/exercises). The content sometimes just repeats policy and on the other side provides details that belongs to Level 3 (ATP/ALP). Furthermore, the RD does not meet the requirements of AAP-47 in numerous ways. Acknowledging the need for promulgation the most important parts of the content of this AJP, DEU ratifies this draft with the reading that AJP-4.7 will be reviewed as soon as possible after promulgation to match the level of publication with the level of content as well as the formal adjustment to meet the standards of AAP-47.
GBR	GBR recognizes the value and quality of the information provided in AJP-4.7B RD. However, as expressed through the Logistic Committee Standardization Working Group, the Logistic Committee Executive Group (Standardization) and the Military Committee Joint Standardization Board before circulation of the RD, has significant concerns that substantial portions of the draft AP do not comply with the nature of Level 2 doctrine (operational-level guidance for the joint commander and staff on operations/exercises) and are either repetition/expression of policy or provide detail that is more appropriate to Level 3 (ATP/ALP). More procedurally, the draft does not meet the requirements of AAP-47 in a number of ways. Acknowledging the need to promulgate the important contents of this AP, GBR ratifies this draft of AJP-4.7B on the understanding that AJP-4.7B will be reviewed, as soon as practicable after the promulgation of AJP-4B, to better match its category of AP with the level of its content – as was suggested by the above three bodies.
LTU	The Lithuania Armed Forces doesn't use F-44 type fuel.
USA	The limited doctrinal context for operational-level petroleum doctrine does not meet the standard for a standalone AJP (operational level guidance to the joint force) on petroleum. The vast majority of this AJP simply provides an introduction, scope and guidance, organizational descriptions, and lists the STANAGS for which the NATO fuels and lubricants working group(s), petroleum handling

	equipment working group(s), and petroleum policy and planning working group(s) are responsible. This reservation will be lifted when this AJP is appropriately retitled as level 3 doctrinal guidance (e.g. ALP-4.7).
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

FOREWORD

This AJP provides guidance to NATO and national authorities of NATO members, partners and other NATO bodies on the petroleum principles, policies and characteristics of the Petroleum Supply Chain (PSC) from point of origin to end-user. It provides guidance for the joint force commander and their staff, by in particular outlining the planning criteria and other factors, which impact upon the PSC, and provides the foundation for the further development of petroleum concepts, doctrine, procedures and support NATO green defence and energy security initiatives[1].

This doctrine provides the basis for the conduct of petroleum support to multinational operations and serves to facilitate the accomplishment of the NATO commander's mission by fostering a common understanding of cooperative logistic petroleum planning amongst NATO military authorities (NMAs), nations and the NATO Command Structure. In addition to petroleum planning, it addresses petroleum reporting, standardization and interoperability, legislation, the environment, education and training.

This doctrine contributes to enhance Energy Management in operation[2].

[1] Further information can be found for example on resolution 407 at http://www.nato-pa.int/DocDownload.asp?ID=B488944A4D05050306D3

[2] See useful description of key terms and element of petroleum in annex

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CHAPTER 1
INTRODUCTION

0101. The term petroleum encompasses fuels, oils and lubricants, even if the petroleum product or constituents of it are not manufactured from crude oil. These products possess characteristics and require handling, management and safeguarding that impose unique requirements to shape, operate and secure the petroleum supply chain (PSC) to support and guarantee security of fuel supply for Alliance operations. The operation of the PSC is further complicated by the constantly changing threats facing NATO today and the consequent impacts on the NATO Force Structure and its operational reinforcement and deployment concepts, hence it requires to keep all expert and stakeholders involved from civilian and military organisations. For these reasons, petroleum, a Class III item in NATO's classes of supply, requires specific doctrine. AJP-4.7 fulfils that need.

0102. In particular, the focus centres on support to combat operations and crisis response operations requiring a high readiness and reactiveness force in accordance with the NATO principles and policies for logistics[3] and the Logistics Support Concept for NATO Response Force (NRF) operation[4]. These factors combine to dictate fuel supply requirements and arrangements as recognized in the Directive for NATO Petroleum Supply Chain, Principles, Policies and Characteristics[5]. This publication should be read in conjunction with the Allied Joint Doctrine AJP-01, C-M(2001) 44 (NATO Policy on Cooperation in Logistics) and the other documents in the AJP-4 logistic doctrine series as well as NATO Energy Security related documents.

0103. Scope

a. The concepts described in this document are applicable to peacetime and the full spectrum of potential NATO operations from crisis through conflict. While much of the doctrine is focused toward the more probable scenarios, the doctrine has wider application including non-NATO nations participating in NATO led operations.

b. NATO Joint Petroleum Doctrine allows considerable flexibility and encourages close cooperation between nations but it does not exclude any particular nation's approach to logistic support.

[3] MC 319/3

[4] MC 526

[5] EAPC(NPC)D(2009)0001 – REV 2, dated 30 March 2010

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CHAPTER 2
CRISIS AND PETROLEUM PLANNING

Section I Crisis management

0201. The NATO Petroleum Committee (PC) is the senior committee within the Alliance with the necessary expertise and contacts with national planning bodies and industry to react to any crisis involving petroleum. In this regard, the PC advises the North Atlantic Council (NAC), the Military Committee (MC), the Logistic Committee (LC), the Civil Emergency Planning Committee, the Industrial Planning Committee and the strategic commands (SCs), as appropriate, on all petroleum matters related to contingency plans for both civil and military emergencies. It liaises with the NATO Energy Security Centre of Excellence (ENSEC COE), the International Energy Agency (IEA) and national petroleum planning bodies and reports any concerns about the ability of the Alliance or the Euro-Atlantic Partnership Council (EAPC) to meet potential operational commitments due to petroleum shortfalls. The NATO Petroleum Crisis Management Organisation and Procedures document[6] outlines how to deal with an incident affecting the supply of petroleum products.

[6] AC/112-D(2006)0007-REV2 (INV), dated 5 March 2009 AC/112-(2010)003

Section II Petroleum planning

0202. Introduction.

Clear doctrine on petroleum planning, execution and support for NATO missions is especially important when operations are to be conducted by allied, multinational or joint forces. The provision of petroleum is essentially a national responsibility. However, in times of crisis and conflict, nations should strive to achieve collective solutions for their petroleum requirements. Shared and integrated solutions including well-trained multinational petroleum support units with centrally arranged contracts for the provision of bulk fuel provide consistent quality and may achieve economies of scale that nations alone would not normally be able to achieve. This doctrine provides the basis for the planning and execution of petroleum support for the Alliance within present and near future multinational joint operations.

The doctrine takes into account the following critical factor of success:

a. Operations conducted on the Alliance territory for Collective Defence – Article 5 Operations requires:
    i. Permanent visibility on the availability of Host Nation capabilities and national capacities to sustain a deployment of forces
    ii. Use of the NATO Pipeline System and associate facilities, other petroleum storage and distribution capabilities as a backbone to supply and support a surge of fuel consumption of a deployed force taking into account the Single Fuel Policy (SFP). These Bulk Fuel Capabilities are developed and tailored through the implementation of the Bulk Fuel Strategy7 (BFS) coordinated by the Petroleum Committee
    iii. The need to consider using NATO agency or nation led operation to reinforce or offset host nation or NATO capability in response of operation requirement.
b. Crisis response operations (CRO) require additional petroleum support for the deployment, recovery and sustainment of operations beyond SACEUR ’s area of responsibility (AOR) and/or outside of the territory addressed in Article 6 of the North Atlantic Treaty.
c. The need for implementation of MC 319/3 which outlines the principle of collective responsibility for logistics drives petroleum support and as a consequence, NATO and nations bear the obligation, taking account of each other's requirements and constraints, to cooperate in the logistics support of operations in a way that their common efforts meets the overall requirement. Nations and NATO are encouraged to cooperatively share the provision and use of logistics capabilities and resources to support the force effectively and efficiently.

7 The Bulk Fuel Strategy is developed in section 6

d. The participation of non-NATO nations in NATO-led operations to strengthen NATO ability to implement a supply chain and to increase critical data sharing capability.

e. The need to maximise efficiency and cost effectiveness of petroleum support, taking into account energy efficiency principles and possible use of alternative energy solutions.

f. The assurance of quality of fuels and lubricants.

g. The establishment of Joint Logistics Support Groups (JLSG HQs) including a POL-dedicated coordination cell to manage theatre level petroleum support, staffed with officers having a high-standard of knowledge in fuels and multinational support structures as defined in AJP-4.9, allied joint doctrine for modes of multinational logistic support and AJP- 4.6 (JLSG).

h. To increase adaptability, flexibility and interoperability, enable operations support in dynamic and complex areas where forces are deployed, petroleum support from the theatre logistics base requires combined forces that must have the ability to adjust in scale and to operate effectively. Modular, flexible and well-trained forces that can be tailored to specific missions and which include multinational modules from across NATO partners and relevant stakeholders will be required. Modular Combined Petroleum Units (MCPU) provide a solution for rapid deployment on missions across a wide range of environments and should be capable of operating at small scale, rapidly building to larger scale when required. These units run military capabilities supplemented by outsourced capabilities as appropriate and will provide the rapid strategic petroleum distribution system to the right locations in a timely manner required in NATO operations.

i. NATO operations conducted in cooperation with the United Nations, the European Union, and the Organization for Security and Cooperation in Europe or other multinational operations.

j. The need to sustain and permanently improve the ability to conduct NATO petroleum planning at Strategic and Operational level by keeping strategic databases updated and supporting an exchange of information on a regular basis within a consistent and trusted network of petroleum experts. An annual Petroleum Workshop to support operations must be organized by the NCS under SHAPE leading and including NATO members petroleum experts in order to share petroleum related operations databases, lessons identified/learned and to address appropriate issues to support the operational planning process at strategic level.

k. The Alliance has a permanently available, multinational, integrated and fully interoperable joint force at very high readiness – NRF – which consists of land, air and maritime components. These agile, flexible forces require careful fuel supply planning and continuous petroleum support. It must be achieved by keeping permanent information sharing and up-to-date database (involving tools developed by the OLCM[8] program) at NATO strategic level on petroleum

[8] Operations Logistics Chain Management

capabilities and capacities among the NFS and nations (including critical stocks level, MIL & CIV assets availability....)

l. Supply arrangements must be established in peacetime to take into account all foreseeable contingencies. To support this intent pre-arranged bi/multilateral support arrangements and commercial solutions should be promoted.

m. The levels and distribution of fuel must be matched to the designated level of readiness, mobility and sustainability of forces to ensure the flexibility of the commander. The NATO strategic situational awareness must be kept updated on a regular basis. Stocks of all types and grades of bulk fuels and additives should not fall below a predetermined minimum level as decided by each nation.

Section III Petroleum planning within the NATO Defence Planning Process

0203. **Defence Planning.** The NATO Defence Planning Process provides a framework within which NATO and national planning can be harmonised. Political Guidance, the Strategic Concept and other Alliance framework policy documents provide a basis for the identification of the Alliance's required military capabilities to conduct deployed operations. Logistics planning (including petroleum planning) is a vital component of the overall defence planning process.

0204. **Capability Reviews.** Capability Reviews are part of the Defence Planning Process. They will be carried out biennially using the Defence Planning Capability Survey (DPCS) for NATO nations and the Survey of Overall Partnership of Peace (PfP) Interoperability for PfP nations. These surveys are issued to the nations and their replies are received and analysed by the NATO International Staff (IS) and Supreme Allied Command Transformation – Staff Element Europe (SACT-SEE). SACT-SEE further coordinates the results with Supreme Headquarters Allied Powers Europe (SHAPE).

0205. **NATO Bulk Fuel Strategy (BFS)[9].** The ability of NATO to ensure the availability of bulk fuel support for Article 5 and crisis response operations depends on Alliance and national deployable and fixed bulk fuel capabilities. The Bulk Fuel Strategy provides NATO with a comprehensive strategy to secure access to fuel supply in a timely manner through readily available and cost effective fuel storage and distribution network. The Bulk Fuel Strategy designs the overall bulk fuel requirements for the Alliance by streamlining the NATO Minimum Capability Requirements (MCR) in light of resource, logistic and military considerations. The implementation of the NATO Bulk Fuel Strategy is achieved through the NATO Defence Planning Process (NDPP).

0206. **Petroleum Planning within Logistics Planning.** Some of the key drivers of the petroleum element of the logistic plan are:

a. **Deployability and Strategic Mobility**. Strategic mobility is the capability to move forces and their sustainment in a timely and effective manner over long distances to and from the place of their intended employment. The Capability Requirements

9 Ref : C-M(2011)0025-REV1 and AS-1

Review (CRR) is key to strategic mobility planning by identifying the requirements for movement assets to support operations envisioned by strategic level. Additionally, and outside of the CRR, planners must determine the Reception, Staging, Onward Movement and Integration (RSOMI) assets that are needed. The CRR is then used as the basis of the process through which nations are asked to allocate assets to meet strategic mobility needs[10] (Target Derivation Apportionment of the NDPP). Once this is done, collective targets are established and implemented through the Capability Package (including infrastructure for fixed bulk fuel capacities)

b. **Sustainability.** Logistic planning in this area focuses on ensuring that personnel, equipment and other material is available in sufficient quantity and quality for the duration of NATO operations. To calculate the size of the sustainability stocks, the final Order of Battle (ORBAT) should be entered into the Sustainment Planning Module (SPM) II along with the intensity factors from the commander's plan and, in the case of petroleum, applied in accordance with Standardization Agreement (STANAG) 2115 related to, fuel consumption unit (FCU).

c. **Sustainment for high readiness and reaction forces including the NRF:** The NRF Logistic Concept, MC 586/1 and MC 319/3, provides for a more centralised system of providing sustainment at theatre level. Unity of effort is achieved through the establishment of a JLSG HQ. The joint force commander can then be directly responsible for the provision of designated classes of supply, Class III. The JLSG HQ can also be responsible for theatre level contracting support and coordinating the RSOM of forces. The level of support that can be provided by the JLSG is directly related to the success in generating the required capabilities, but the aim is to enable effective economies of scale and reduce costs, avoid resource hoarding and competition for resources both locally and globally, enhance overall logistic C2, allow tailoring of National Support Elements (NSEs) producing an optimized logistic footprint, improve theatre level visibility for the commander JTF, make best use of specific national logistics expertize and hardware, enhance coordinated use of logistic infrastructure, reduce national (logistics) deployment packages reduce dependence on national support elements, reduce redundant capabilities in theatre and ease the burden on strategic lift by sharing theatre level sub-capacities. Common JLSG HQ subordinated petroleum units and outsourcing for such commodities as fuel also offers scope for resource and financial savings and a more integrated and collective solution.

d. **Stockpile Planning.** Care must always be taken to strike the right balance between stocks stored for military use and the capability of the PSC to meet increased demand. Reference should be made to MC 55/4, MC 317/1, MC 327/2 (NATO Military Policy for NA5CRO) and the biennial Bi Strategic Command (Bi-

10 Annex A.6 : Petroleum capabilities to be used in the NATO Defence Planning

SC) Stockpile Planning Guidance. Further guidance is provided in the Fuel Supply Planning in NATO document[11].

e. **Stock Level Management.** The stock criteria in terms of days of supply (DOS) will be determined based on the sustainability statement published in the logistic annex of the operation order. Stocks for sustained operations will include organic stocks of units plus additional stocks maintained at support levels necessary to cover the order and shipping time for supplies. The actual positioning of supplies will be dependent on the operational situation and the ability of the strategic and tactical transport to move supplies forward into the joint operations area. Other factors that will influence stock levels and locations include the political situation, the risk to which the stocks will be exposed and the cost effectiveness of holding stocks forward, versus re-supplying stocks from home bases.

f. **Energy management on operations**. A stable and reliable energy supply, diversification of routes suppliers and energy resources and the interconnectivity of energy networks remain of critical importance. Energy management must be considered to improve the NATO forces ability to measure operational use of energy, reduce demand and increase combat effectiveness. By improving a common understanding of energy efficiency in exercises and operations the energy cost may decrease as well as fuel consumption and the existing energy supplies may be enhanced.

11 AC/112-D(2007)0002, dated 13 March 2007 and AC/112-D(2007)0002-AS1, dated 26 July 2007

Section IV Petroleum planning within the Operational Planning Process

0207. **The planning process**. MC 0133/4 describes the NATO's operations planning. It addresses all aspects of an operation plan and provides guidance on the planning factors to be taken into consideration during plan development. It specifies the standard structure and content of the operations plans. According to MC 0133/4 there are two operations planning categories which are:

1) Advance Planning:
- (a) Contingency Plans.
- (b) Standing Defence Plans.
- (c) Generic Contingency Plan

2) Crisis Response Planning: Operation Plans (OPLANs).

MC 0133/4 provides direction for the planning principles, guidance and sequence of planning activities (described in AJP-5 and COPD) including conducting logistic planning and petroleum support, for an operation. NATO petroleum planning is iterative and has the following as its major steps:

a. Identify any logistics planning assumptions for course-of-action development that require consideration for continued plan development. Contingency planning by the command group and J5 is based on a calculated risk. The outcome of this is an outline concept of operations (CONOPS).

b. The CONOPS leads to calculation of the forces and resources required for the mission and so starts the force generation process.

c. In parallel and simultaneously, the J4 staff will start the process of writing the logistic annex(es) to the eventual OPLAN for the mission. One of the key inputs to this process is the petroleum plan which may be an annex in its own right for a complex large scale operation, or just a few paragraphs in the main plan if the operation is small, simple or of limited duration. The first stage in preparing any petroleum plan is the determination of the volumetric requirement. Planners must determine the overall FCU, in litres, in accordance with the details in STANAG 2115. J3 planners will determine the intensity factors to be applied to the FCU at the various stages of the mission together with the policy for holding stocks at various levels within the force. Whilst the FCU can be used to calculate daily supply rates and DOS, these vary as the operation develops and as the commander in the field responds to the situation. Petroleum planners should, therefore, only use the FCU as a basis for reporting as it avoids the complication of constant revision and, unless there is a major loss of equipment due to battle damage, remains constant between force rotation or planned changes to ORBAT.

d. Several sophisticated tools and applications now exist to assist in the planning process. They must be filled with data and updated regularly by nations to allow a maximum use. These tools produce data, manipulate in a standard format in

compliance with all accepted STANAGS and Alliance procedures. Principal amongst these are:

(1) LOGBASE – the Logistic Database (LOGBASE) that holds details of equipment and consumption rates. All NATO vehicles and equipment now have a Reportable Item Code (RIC) that identifies them and the type of fuel that they use.

(2) ACROSS – the Allied Commands Resources Optimisation Software System (ACROSS) that calculates stockpile planning data.

(3) SPM II – SPM II draws on data from LOGBASE and ACROSS and can integrate output directly with the Allied Deployment and Movement System (ADAMS) so that the sustainability requirements of any given ORBAT can rapidly be calculated and expressed in NATO standard terms.

(4) ADAMS – ADAMS facilitates detailed movement and lift requirement planning.

(5) LOGREP – Logistic Report (LOGREP) the logistic reporting tool used for national reporting and Command-level logistics assessment.

(6) SDM – Supply Distribution Model facilitates detailed courses of action for planned resupply integrated into Logistic Functional Area Services (LOGFAS) system.

e. The process is iterative since the ORBAT will not be finalized until after the final force generation conference and may change at any time up to Transfer of Authority following signing of the Participation Agreement (PA) by nations. The use of the tools and applications mentioned above is the only way of responding to rapidly changing data and ensuring that the petroleum plan is accurate and reflects reality. As a consequence, personnel assigned to specialist NATO petroleum posts must be familiar with the tools and applications outlined above. It is a national responsibility to ensure that personnel receive the individual training at the appropriate NATO school prior to taking up their appointment. Where this is not achievable, such personnel should be released for training within 6 months of taking up their post.

f. Theatre-specific factors – Consideration must be given to theatre-specific factors such as available commercial and HN supply sources and transportation assets. Many of these sources of petroleum supply will have political, technical and economic factors that limit their availability (including taxes and customs aspects). These commercial and HN limiting factors must be taken in account when developing the plan to support the deployment, employment, sustainment and redeployment of forces. Some factors that commanders and planners must take into account include the following:

(1) Force protection for contractor personnel, fuel equipment and stocks,

(2) Contractor limitations with regard to support (availability, sustainability, quality assurance, cost…),

(3) Contractor required logistic support,

(4) Quality assurance of the products,

(5) Local environmental and hazardous goods regulations, expertise of contractor's assets,

(6) Regional capabilities and ISBs to support strategic airlift transiting through the operational area,

(7) Regional capabilities to support air force tankers supporting air force operations,

(8) Airfield limitations, maximum aircraft on the ground, expected consumptions,

(9) Lines of communication capabilities and limitations,

(10) Specialty fuel requirements (unmanned system, special equipment, specific generators),

(11) Helicopters deployment, special operations forces

(12) Climate and altitude impacting the helicopter range and the number of forward arming and refuelling points (FARPs).

g. Threat environment – While theatre-specific factors may require force protection actions, Critical Energy Infrastructure Protection (CEIP) – (including petroleum equipment, stocks and civilian CEIP in article 5 operations), quality assurance actions should also be considered. Ensuring adequate security may include specific and appropriate countermeasures against tampering, adulteration, substitution, contamination and other actions that could make the fuel unusable or potentially damaging to the end user.

0208. Once the FCU has been calculated and the intensity and stock planning requirements have been ascertained, detailed planning can start. The first question is usually how much fuel travels with the force in vehicle tanks, indigenous bulk fuel carriers and small containers? This leads to a calculation of how much additional petroleum product needs to be made available and at what stage re-supply will need to begin.

0209. At an early stage in planning, the Alliance will usually select a J5 plans-led reconnaissance team to go to the theatre or adjacent forward mounting base (FMB). It is essential that a specialist petroleum planner is a part of any such team to carry out site-surveys and provide petroleum support related recommendations. Certain aspects of petroleum logistics can impact directly the operation and must to be taken in account by the operation planners. It could be completed by a specific fuel technical reconnaissance mission in order to expertise the specifics local factors.

0210. The petroleum plan should be based upon the following principles:

a. The types of fuel required will be determined by the nature of the operation being undertaken and the forces from which it is composed:

(1) The maritime component will primarily use Naval fuels (F-75/F-76 and naval jet fuel, F-44).

(2) For the land and air components, the primary source of fuel on the battlefield will be F-34 in accordance with NATO's Single Fuel Policy (SFP). For some strategic aircrafts it could be F-35.

(3) The use of other fuels such as aviation gasoline (F-18), diesel fuel (F-54), and ULGAS (F-67) must also be determined for equipment that are incompatible with the SFP and some nations will have to make separate arrangements for their needs.

b. **Maritime operations supply.** The access to and convenience of obtaining necessary fuels during maritime operations (including aviation fuel for on-board aircraft and helicopters) is of primary importance. A fuel network able to provide all POL needs must be established during the planning process considering the peculiarities of the maritime environment. Adequate mooring facilities and access to fuel providing infrastructures must be assured. In the case of NATO operations in large maritime areas and the related difficulties of having appropriate HN support, may require that the availability of oil tankers should be considered to ensure replenishment at sea (RAS). Fleet replenishment oiler capability can also be undertaken by interoperable non NATO Nations through an adhoc Memorandum of Understanding (MOU).

c. National and NATO authorities have a collective responsibility for logistic support of NATO's multinational operations. Nations must ensure either individually, or through co-operative arrangements, the provision of petroleum support to their forces allocated to NATO during peace, crisis and conflict. Should there be a requirement for any other type of fuel and additive it will be a national responsibility to supply it. However, while the reconnaissance officer will concentrate on local supply sources for F-34 / F-35, he or she may be able to assist nations that need other types, provided that he or she is aware of the requirement. Petroleum support should be undertaken from as close to the point of consumption as practicable, striking a balance between the closest resource available and risks of supply.

d. Supply arrangements must take into account all foreseeable contingencies. The levels and distribution of fuels must be matched to the designated levels of readiness, mobility and sustainability of military forces. Fuel stocks should ideally not fall below a predetermined minimum level as decided by each nation and should be in accordance with any Sustainability Statement issued by the commander.

e. Maximum use should be made of Host Nation Support (HNS), where available and, if possible, a host nation (HN) specialist should be found to assist the NATO-led force. A HN specialist in this context would have the status of HN liaison officer to the JLSG HQ and planners will need to ensure that such personnel are taken into account under Status of Forces Agreements, MOU or Technical Arrangements (TA).

f. If the Government of the HN cannot pledge HNS then maximum use should be made of local contracts and direct delivery from industry, where risk to supply and quality are deemed acceptable. There are several databases that can be used by NATO petroleum planners to assist in assessing the global commercial supply situation before deploying on a reconnaissance mission.

g. There are a number of databases available including the database on bunker fuels that NATO nations have funded and maintained by the NATO Support and Procurement Agency (NSPA) and those maintained in national or multinational organisations like :

   i. the United States (Defense Logistic Agency – Energy DLA-E), the United Kingdom (Defence Strategic Fuels Authority - DSFA), France (Services des Essences des Armées - SEA),

   ii. the ENSEC COE, the IEA, and all of whom have information that may prove useful.

h. In addition, the NATO Petroleum Crisis Management Organization and Procedures[12] provides national focal points and points of contact within the SCs, joint force commands (JFCs), NSPA/CEPS PO (the Central Europe Pipeline System Programme Office) and NATO HQ which can be contacted in crisis situations.

i. Whenever possible, maximum use is to be made of the existing NATO Pipeline System (NPS) and associated fuel infrastructure. The use of this existing fuel infrastructure reduces overall cost, provides a common set of procedures and standard equipment and enhances interoperability and mutual support. In deployments in the context of crisis response operations and beyond the territory addressed in Article 6 of the North Atlantic Treaty, the NPS provides the backbone for fuel supply to successfully deploy, sustain and recover forces throughout Europe as the infrastructure covers most airports and seaports of embarkation. Whilst the use of the Air and Sea Ports of Embarkation is very much national business, the NATO petroleum planner has a crucial role in coordination, particularly where the staging of aircraft and ships is involved.

j. The principles of AJP-4.9 should always be applied. Whenever possible, a LRSN or LLN should be appointed for the in-theatre petroleum supply function for all participating forces. Thought should also be given to burden-

12 AC/112-D(2010)0003, dated 1 March 2010

sharing by the use of Modular Combined Petroleum Units to execute the petroleum plan in theatre.

k. There will be times when the reconnaissance reveals that there is no usable HN infrastructure or that it is so damaged or lacking in capacity that it cannot sustain the Alliance deployment. In such circumstances, the reconnaissance officer must make an assessment of what Deployable Fuels Handling Equipment (DFHE) and specialist resources will be needed to enable the force to operate. Any requirement for DFHE must be expressed in the framework of the equipment modules specified in STANAG 4605/Allied Fuels and Logistics Publication (AFLP)-7 -Tactical Fuels Handling Equipment (TFHE) Technical Characteristics. Using this format will allow the force generation process to identify potential donors of DFHE and explore options for collective solutions for petroleum fuels support such as Modular Combined Petroleum Units. The deployment and the layout of DFHE on the ground is broken down between the tactical level (1st and 2nd line), the theatre logistics base (3rd line) and the strategic level (4th line). Modular Combined Petroleum Units run petroleum support from the theatre logistics base by combining and/or coordinating, as appropriate, DFHE, outsourced capabilities and HNS.

l. In the interests of interoperability the STANAGs listed in Annexes A – C, which are sponsored by the PC (AC/112) and its specialist working groups are to be used at all stages in the planning and conduct of operations. The Petroleum Handling Equipment Working group (PHEWG) and the NATO Fuel and Lubricant Working group (NF&L WG) sponsored STANAGs are listed in Annexes A and B respectively. STANAG 3149[13], STANAG 4616/AFLP-8[14], STANAG 7063[15] and AFLP-6[16] will be taken into account when considering quality assurance and surveillance. Nations agreeing to act as LLN or LRSN for fuel supply are to ensure that they supply F-34 in strict accordance with STANAG 3747/AFLP-3747 (Guide Specifications (Minimum Quality Standards) for aviation turbine fuels (F-24, F-27, F-34, F-35, F-37, F-40 and F-44) and never outside the tolerances agreed under STANAG 1110 (Allowable Deterioration Limits for NATO Armed Forces' Fuels, Lubricants and Associated Products).

m. Consider during the planning phase how best to take advantage of alternative energy solutions

[13] Minimum Quality Surveillance of Petroleum Products

[14] Capabilities of National/Military Laboratories of NATO and Partner Nations

[15] Methods of detection and treatment of fuels contamination by micro-organisms

[16] Procedures for the treatment of fuels contaminated by micro-organisms

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CHAPTER 3

Section I Petroleum reporting

0301. Through fuels reporting, commanders and senior NATO staffs are kept informed, during peace, crisis and conflict, of fuel matters. These reports include:

a. **Annual Report to the NAC.** The PC submits as part of the Logistics Committee annual report to the NAC. It aims at providing updated relevant information on the NPS and its associated fuel facilities, highlights the work conducted by the PC and its subordinate working groups and working parties regarding fuels policy and planning, fuels interoperability, expeditionary fuels and activities involving Partners. The annual report is prepared by the Staff Officer and is staffed through the PC prior to being sent to the LC for inclusion in their annual report to the NAC.

b. **Annual Report to the PC on Military Pipeline Systems and Bulk Fuel Facilities.** All NATO nations[17] are requested to provide information on their military pipeline systems and bulk fuel facilities[18]. These reports provide detailed information on the military pipeline systems and on military or civil fuel depots, military or civil airbases, refineries, sea terminals and civil pipeline systems connected to these military pipeline systems. Nations who do not own a military pipeline system have to report on their military and joint use bulk fuel facilities, depots, airbases, sea terminals, civil airports and civil pipelines with a military relevance. If applicable, nations also provide information regarding on-going infrastructure works or future plans. These Annual Reports form a key element of the Annual Report to the Council and the data provided should be assessed in order to identify data to populate LOGBASE.

c. **Operation and Maintenance Reports.** The Charter for the Organisation of the NPS[19] states the NPS and the POL category facilities must be so controlled as to ensure that they meet the NATO NMA's requirements in peace, crisis and conflict. This will be accomplished, inter alia, through adherence to the various policies including NATO Petroleum Crisis Management Organisation and Procedures and the NATO Pipeline System Minimum Repair Capability Policy[20]. The NMAs are responsible for validating the operational requirements for the pipeline systems and POL facilities included in this document. Furthermore they are responsible for

[17] In the case of Central Europe Pipeline System (CEPS) and North European Pipeline System (NEPS) the reports are to be prepared and submitted by NSPA/CEPS PO and JFC Brunssum respectively.

[18] In accordance with guidance provided in AC/112-D(2008)0001-REV1 – Annual Report to the PC on Military Pipeline Systems and Bulk Fuel facilities

[19] C-M(2009)0084

[20] AC/112-D(2006)0010-REV1

development of appropriate Capability Packages by the SCs and their endorsement by Military Committee (MC) and for exercising sufficient supervision and coordination to ensure the operational readiness of the NPS. The mechanism for carrying out the supervisory responsibilities is to be determined by the NMAs and advised to NPS nations through the PC.

d. **Incident Reporting.** There is a need for a system to report on threats or incidents involving the NPS, its Associated Fuel Facilities and other NATO-funded fuel systems including those used in operations so that pertinent information is provided through the appropriate chain of command in a timely manner in order for NATO authorities to be able to respond to these threats or incidents. The Directive for Reporting Incidents involving the NATO Pipeline System, its Associated Fuel Facilities and other NATO Funded Systems[21] specifies in detail the procedures to be followed in the reporting of incidents.

e. **Logistic Reporting.** Both the Logistic Update (LOGUPDATE) and Logistic Assessment Report (LOGASSESSREP) messages[22] can be used to update NATO commanders on the fuels situation.

f. **Force Planning Fuels Reporting.** Fuel holdings and storage capacities to meet force planning requirements must be reported annually as part of the stockpile planning process by NATO nations and in response to the PfP Survey for Interoperability by Partner nations. Similarly, fuel holdings form part of the annual Defence Planning Questionnaire. National requirements for fuels holdings are outlined in MC 55/4. Further guidance is available in AC/112-D(2007)0002, Fuel Supply Planning in NATO dated 13 March 2007.

g. **Crisis communications.** A Crisis Communication Plan needs to be established to effectively manage communications through a formal, clearly defined chain of command in order to mitigate crisis, or serious negative repercussions associated with any petroleum-based incident. Further, it is necessary to maintain a reputation of leadership and transparency on vital issues and breaking news.

    (1) In speaking with the media and public, the Petroleum Committee (PC) will provide factual information and strategic communication recommendations to the NAC, MC, Logistics Committee (LC), Civil Emergency Planning Committee (CEPC), the Industrial Resources and Communications Services Group (IRCSG) and SC, as appropriate, on all petroleum matters related to contingency plans for both civil and military emergencies.

    (2) In all communications, the PC will strive to be responsive and solution/action oriented, and reinforce the PC's position of leadership and situational awareness.

[21] AC/112-D(2007)0001-REV1, dated 13 March 2007 and AC/112-D(2007)0001-REV1-AS1, dated 29 March 2007

[22] Bi-SC Reporting Directive, 80-3, Volume V, Logistic Reports

Section II Standardization and interoperability

0302. Standardization and interoperability directly influence the combat effectiveness of NATO's forces and are key elements in the PSC. While military fuel specifications are stringently formulated to meet extreme operating conditions, compatibility between the military and civil sectors is of increasing importance. Thus, the ability of using alternative fuels (including alternative energy solutions) and lubricants in equipment either as an acceptable product or as an emergency substitute is reviewed by the NF&L WG which agrees changes to its STANAGs annually as appropriate. In particular, STANAG 1135 details the "Interchangeability of Fuels, Lubricants and Associated Products used by the Armed Forces of the North Atlantic Treaty Nations".

0303. Interoperability is further enhanced by the application of NATO's SFP under which F-34/F-35 is used as the single fuel on the battlefield by ground-based forces. Standardization of petroleum handling equipment, particularly couplings for ground and maritime use, is essential to ensure interoperability and is one of the key objectives of the PHEWG during its annual review of DFHE policy and its update of the STANAGs for which it is responsible.

Section III Environmental protection and legislation

0304. **General**. NATO has recognized that environmental protection (EP) is an important aspect of any military activity. Success of NATO operations will be measured, in part, by how effectively its forces address environmental considerations while meeting its mission objectives. While acknowledging that operations imperatives have priority, MC 469/1, NATO Military Principles and Policies for Environmental Protection (EP), states that under all conditions, NATO-led forces must strive to respect EP principles and policies. This includes international and national legislation, all of which is becoming more stringent.

0305. **Interoperability and Standardization.** With different national policies, legislation and standards pertaining to EP, a NATO commander could potentially have difficulty directing and implementing appropriate EP measures. Further, differing national laws and responses to international legislation could undermine the effectiveness of a logistics lead nation (LLN) or logistics role specialist nation (LRSN) on an operation. NATO EP documentation exists to assist the commander. In addition to MC 469/1, direction and guidance is provided through STANAG 7102, Environmental Protection Handling Requirements for Petroleum Handling Facilities and Equipment, and through several Allied Joint Environmental Protection Publications (AJEPPs). In particular AJEPP-4 (STANAG 7141), Joint NATO Doctrine for Environmental Protection During NATO-led Military Activities, describes commanders responsibilities, as well as planning and risk assessment considerations. This includes considerations vis-à-vis legislation. Furthermore, AJEPP-3 (STANAG 2583), Environmental Management System in NATO Operations, provides a systematic management approach that can be used by NATO EP planners to identify and reduce the environmental impacts of a NATO deployment.

0306. **Site Assessment, clean-up and Remediation.** NATO strives to ensure that any site used by its forces is left in a comparable environmental condition to that which it was upon occupation. This protects the environment and also protects NATO from any future environmental liability and from negative publicity. The best tool for measuring the environmental condition of a site is an Environmental Baseline Study (EBS), conducted upon occupation. This is followed up by an Environmental Closeout Study (ECS) upon redeployment. During deployment, periodic Environmental Condition Reports (ECRs) may be prepared, and the site should be cleaned-up and remediated when pollution occurs as a result of NATO activities. Templates and directions for these reports and more are contained in AJEPP-6 (STANAG 6500), NATO Camp Environmental File During NATO-led Operations. The Camp or Task Force Engineer or EP Officer has the expertise to implement these activities.

0307. **Transportation.** Petroleum, oils and lubricants (POL) are often the source of pollution in soil or water during military activities. Contaminated soil may need to be transported, as well as hazardous waste. Direction and guidance on the management of waste is provided in AJEPP-5 (STANAG 2510), Joint NATO Waste

Management Requirements During NATO-led Military Activities, and AJEPP-2 (STANAG 2582), Environmental Protection Best Practices and Standards for Military Camps in NATO-Led Military Operations. Given the legal requirements of transboundary movement of hazardous waste, a signed agreement among the participating nations and the transit nations is recommended. Moreover, the conditions outlined in the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal must be applied. In addition to the Basel Convention, the particular conditions stated in regional international conventions concerning disposal of hazardous waste must be considered if applicable.

0308. **Impact of legislation:**

a. **The need for Collective Response.** NATO and its partners have made much progress in the field of interoperability and standardization. This work is vital if mutual support is to be a reality and the costs of sustaining coalition operations are to be minimized. Therefore, national responses to changing legislation are important at the collective level since differing levels of application of new legislation, or nations seeking derogation, could undermine the military capability to operate as an Alliance with LLN and LRSN.

b. **The need to analyse the Impact of Change on Interoperability.** Whatever the will to act in concert and the willingness to discuss collective response, it is inevitable that legislation and national rules for the application of law will mean that there are differences amongst the national contingents in a multinational force. Such differences need not impede multinational logistic cooperation and mutual support provided that they are understood during the planning phase.

c. As an example, some nations impose an absolute ‘duty of care’ that impacts on site clearance standards and ‘force protection’ requirements. These can impose obligations to undertake infrastructure and related works and have time and cost implications. In the same way that the PC and its subordinate sub-committees and working groups are the appropriate vehicle to discuss collective response, they should also provide the forum through which the implications of legislative change and national responses are discussed. Once determined, the impact of response can then be fed to appropriate decision makers and planners in advance of Alliance deployments. This activity will also start the process that ultimately involves the Infrastructure Committee if NATO common funds are to be committed to an operation.

Section IV Education and training

0309. Greater emphasis on more expeditionary and high readiness operations has significant implications for NATO posture as well as Education and Training (E&T) for Logistics

0310. The NATO ETEE policy, MC 0458/3 defines the process and responsibilities for the management of NATO education and training. Petroleum Operations E&T is an identified area of interest inside the NATO Logistics Strategic Education Plan and must be developed accordingly.

0311. Petroleum support is part of a complex functional area of Logistics. It requires that Education and Training of fuel personnel involved in petroleum planning and operations guarantee them an extensive expertise related to all petroleum related aspects.

0312. As per BI-SC 75-2 Education and training directive (E&TD) October 2013, any shortfall identified or need to improve a specific area related to petroleum operations E&T will be managed by the Logistic Department Head (DH), an institution with logistics E&T expertise, appointed by HQ SACT to develop the requirements into specific education and training solutions (individual and collective courses, training and exercises). A Training Requirement Analysis (TRA) and a Training Need Analysis in accordance with the NAC approved Strategic Training Plan (STP) will be conducted.

0313. Shortfalls in E&T requirements can be identified by operational commanders, by HQs formations and units within the NCS or NFS and in a NATO-led context. The operational-level commanders' performance gaps, as well as identified shortfalls by HQs formations and units within the NCS and NFS, will be managed through the conduct of a Training Requirements Analysis (TRA) within the Global Programming structure and the Training Need Analysis (TNA) will develops a solution when a gap is identified.

0314. E&T solutions providers: The NATO Petroleum Course is aimed to train NATO and national fuels personnel at the strategic, operational and higher tactical levels on all aspects of NATO petroleum matters. Additional E&T providers can be considered as new requirements arising among NATO Education and Training initiatives, NATO accredited Centres of Excellence, NATO recognized Partnership Education and Training Centre, National/Multinational Training institutions from NATO, partner nations and Non-NATO entity.

Section V Implementation

0315. AJP 4.7 reflects the policy in the Directive for the NATO Petroleum Supply Chain[23] and will be supplemented by detailed procedures as appropriate. NATO and Partner nations are encouraged to adapt their doctrine and procedures accordingly.

[23] EAPC(NPC)D(2009)0001–REV2, dated 30 March 2010

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ANNEX A

STANAGs/APs/STUDIES FOR WHICH THE PC IS RESPONSIBLE

STANAG/AP/ STUDY	TITLE	CUSTODIAN
2115/Edition 5	Fuel Consumption Unit	GBR
2536/AJP-4.7	Allied Joint Petroleum Doctrine	ACT

STANAGs/APs/STUDIES FOR WHICH THE AC/112 (NF&LWG) IS RESPONSIBLE

STANAG/AP/ STUDY	TITLE	CUSTODIAN
1110	ALLOWABLE DETERIORATION LIMITS FOR NATO ARMED FORCES FUELS, LUBRICANTS AND ASSOCIATED PRODUCTS	USA
1135	INTERCHANGEABILITY OF FUELS, LUBRICANT FUELS, LUBRICANTS AND ASSOCIATED PRODUCTS USED BY THE ARMED FORCES OF THE NORTH ATLANTIC TREATY NATIONS	FRA
1385	GUIDE SPECIFICATION (MINIMUM QUALITY STANDARDS) FOR NAVAL DISTILLATE FUELS (F-75 AND F-76)	NLD
1414	GUIDELINES TO ENSURE THAT CONTRACTORS DESIGN AND SUPPLY NEW EQUIPMENT CAPABLE OF USING STANDARDIZED FUELS, LUBRICANTS AND ASSOCIATED PRODUCTS	NLD
1425	GUIDE SPECIFICATION (MINIMUM QUALITY STANDARDS) FOR LUBRICATING OIL, STEAM TURBINE AND GEAR LIGHT SERVICE (O-240 & O-253)	CAN
3149	MINIMUM QUALITY SURVEILLANCE FOR FUELS	GBR
3390	INSPECTION STANDARDS FOR FUEL SOLUBLE CORROSION INHIBITORS/LUBRICITY IMPROVERS	USA
3713	DETERMINATION OF PARTICULATE MATTER IN AEROSPACE HYDRAULIC FLUIDS USING A PARTICLE SIZE ANALYZER	CAN
3747	GUIDE SPECIFICATIONS (MINIMUM QUALITY STANDARDS) FOR AVIATION TURBINE FUELS (F-34, F-35, F-40 AND F-44)	USA
3748	HYDRAULIC FLUIDS, PETROLEUM (H-515) AND POLYALPHAOLEFIN (H-537 AND H-538)	CAN

STANAG/AP/ STUDY	TITLE	CUSTODIAN
4362	FUELS FOR FUTURE GROUND EQUIPMENTS USING COMPRESSION IGNITION OR TURBINE ENGINES	USA
4596	GUIDE SPECIFICATION FOR LUBRICATING OIL, NAVAL DIESEL ENGINE, SEVERE SERVICE, GRADE 40 (O-278)	GBR
4601	GUIDE SPECIFICATIONS FOR HYDRAULIC FLUIDS FOR NAVAL APPLICATIONS (H-573, H-574, H-576)	DEU
4616/ AFLP-8	CAPABILITIES OF NATIONAL MILITARY LABORATORIES OF NATO AND PARTNER NATIONS	CEPS PO
4714	MINIMUM QUALITY SURVEILLANCE FOR LUBRICANTS AND ASSOCIATED PRODUCTS	GBR
7017	SPECTROGRAPHIC ANALYSIS OF AIRCRAFT ENGINE LUBRICANTS	USA
7036	FUELS TO BE INTRODUCED INTO AND DELIVERED BY THE NATO PIPELINE SYSTEM (NPS)	USA
7063	METHODS OF DETECTION AND TREATMENT OF FUELS CONTAMINATED BY MICRO-ORGANISMS	FRA
AFLP-6	PROCEDURES FOR-THE TREATMENT OF FUELS CONTAMINATED BY MICRO-ORGANISMS	FRA
7090	GUIDE SPECIFICATION FOR NATO GROUND FUELS	BEL
7091	GUIDE SPECIFICATIONS FOR NATO ARMY HEAVY DUTY ENGINE AND TRANSMISSION OILS	GBR
7093	GUIDE SPECIFICATION FOR NATO ARMY AUTOMOTIVE FLUIDS	GBR
7101	GUIDE SPECIFICATIONS FOR GREASES	GBR

STANAGs/APs/STUDIES FOR WHICH THE PHEWG IS RESPONSIBLE

STANAG/AP/ STUDY	TITLE	CUSTODIAN
2946	FORWARD AREA REFUELLING EQUIPMENT	USA
2947	TECHNICAL CRITERIA FOR A CLOSED CIRCUIT REFUELLING SYSTEM	USA
3416	METHANOL/WATER AND DEMINERALISED WATER REPLENISHMENT	DEU
3583	STANDARDS OF ACCURACY FOR DIFFERENTIAL PRESSURE GAUGES FOR AVIATION FUEL FILTERS AND FILTER SEPARATOR VESSELS	GBR
3609	STANDARDS FOR MAINTENANCE OF FIXED AVIATION FUEL RECEIPT, STORAGE AND DISPENSING SYSTEMS	USA
3681	CRITERIA FOR PRESSURE FUELLING/ DEFUELLING OF AIRCRAFT	USA
3682	ELECTROSTATIC SAFETY CONNECTION PROCEDURES FOR LIQUID FUEL LOADING/ UNLOADING OPERATIONS DURING GROUND TRANSFER AND AIRCRAFT FUELLING/ DEFUELLING	DEU
3756	FACILITIES AND EQUIPMENT FOR THE RECEIPT AND DELIVERY OF AVIATION KEROSENE AND DIESEL FUELS	GBR
3784	TECHNICAL GUIDANCE FOR THE DESIGN AND CONSTRUCTION OF AVIATION AND GROUND FUEL INSTALLATIONS ON NATO AIRFIELDS	USA
3847	HELICOPTER IN-FLIGHT REFUELLING (HIFR) EQUIPMENT	CAN

STANAG/AP/ STUDY	TITLE	CUSTODIAN
3887	TRIAL REPORTS AND DESIGN CRITERIA FOR IN-SHELTER FUELLING AND DAMAGE REPAIR - AFLP-3	USA
3967	DESIGN AND PERFORMANCE REQUIREMENTS FOR AVIATION FUEL FILTER SEPARATOR VESSELS AND COALESCER AND SEPARATOR ELEMENTS	USA
4604/AFLP-9	PERFORMANCE CRITERIA FOR COLLAPSIBLE HOSE ASSEMBLIES FOR FUEL TRANSFER	FRA
4605/AFLP-7	TACTICAL FUELS HANDLING EQUIPMENT (TFHE)	GBR
4712	STANDARDS FOR MAINTENANCE OF DEPLOYABLE FUEL RECEIPT, STORAGE AND DISPENSING SYSTEM	CAN
7011	AUTOMATED FUEL SYSTEM MONITORING AND CONTROL EQUIPMENT	USA
7013/AFLP-10	AIRCRAFT FUELLING HAZARD ZONES	GBR
7029	CHARACTERISTICS OF AIRCRAFT FUELLING HOSES AND COUPLINGS	DEU
7071	DESIGN AND PERFORMANCE CRITERIA FOR AVIATION FUEL ADDITIVE INJECTION EQUIPMENT	GBR
7102	ENVIRONMENTAL PROTECTION REQUIREMENTS FOR PETROLEUM FACILITIES AND EQUIPMENT	USA

GLOSSARY OF TERMS AND DEFINITION

Energy Management in operation: refers to the competences of NATO forces to:

- Have uninterrupted access to reliable supplies of energy resources;
- Employ alternatives energy sources in operational environment (using energy from renewable and alternative sources);
- Use efficient and environmentally sustainable energy sources (Plan and standardize new efficient deployable infrastructure and equipment);
- Protect and safely deliver sufficient energy resources to meet operational requirements without limiting operational capabilities (Driving energy saving behavior)

Multinational Solutions for petroleum support: combination of the following capabilities/capacities facilitating cost savings, efficiency and minimizing the footprint to implement the full spectrum of petroleum supply chain:

- *Host nation support*: support provided through military capabilities (Petroleum facilities on military bases, fixed and deployable Bulk fuels capabilities), civilian capacities (refinery, terminal, pipeline, various transportation and distribution network)

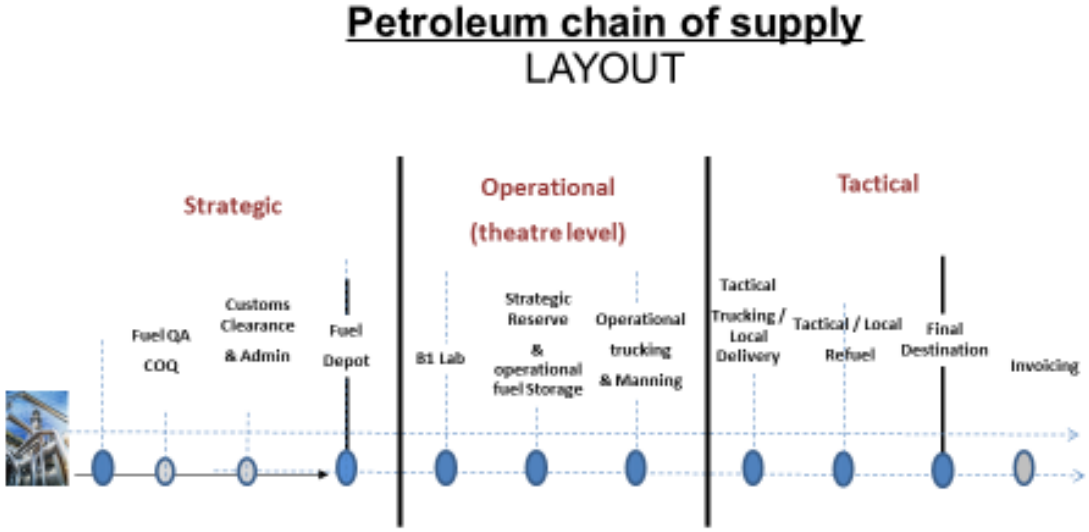
- *NATO Pipeline System (NPS):* storage and transportation infrastructure part of bulk fuel that ensure NATO's ability to provide fuel to NATO military forces in support of Article 5 operations as the initial source of fuel for the sustainment and strategic reserve.
- *Contractor support to operation* (NSPA is part of key possible providers of outsourced capacities)

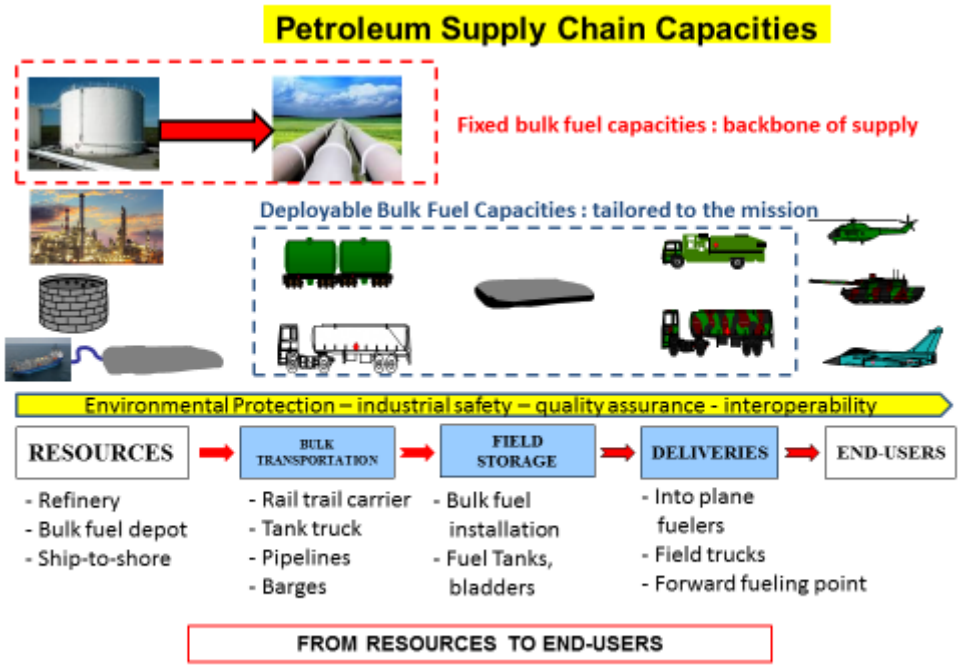
- *High readiness and responsiveness military solutions:* Deployable Fuel Handling Equipment (DFHE) operated by national or Multi-national units (such as *Modular Combined Petroleum Units – MCPU), ensure the petroleum chain of supply can deliver the fuel at the right location in a timely manner in theatre where limited fuel storage and distribution capacities are limited. These capabilities are aimed to set and run any* strategic network of distribution in a very constraint and demanding environment (in Theatre Logistics Base) to support operations requiring a high responsiveness:

  .a To support an early stage of deployment of forces (including a 1st entry of forces)
  .b To be deployed to supplement any other solutions (HN or outsourced capacities) that would turn out not sustainable enough.
  .c To support the deployment of a follow-on force and set the ground to a full outsourced solution

Petroleum supply chain (PSC)

The petroleum supply chain breaks down in three levels: *strategic level* (including the access to fuel resources), *operational-level* covering theatre level fuel support including critical components like bulk transportation capacities (upstream), field storage for strategic and operational reserves (Bulk Fuel Installation), fuel deliveries capacities (downstream), one dedicated fuel quality control capacity for each opened theatre – (B1 level test laboratory –not covered in BFI) and a *tactical level* covering POL capacities belonging to component commands




Petroleum Supply Chain Capacities
Fixed bulk fuel capacities : backbone of supply
Deployable Bulk Fuel Capacities : tailored to the mission
Environmental Protection – industrial safety – quality assurance - interoperability
RESOURCES
BULK TRANSPORTATION
FIELD STORAGE
DELIVERIES
END-USERS
- Refinery
- Bulk fuel depot
- Ship-to-shore
- Rail trail carrier
- Tank truck
- Pipelines
- Barges
- Bulk fuel installation
- Fuel Tanks, bladders
- Into plane fuelers
- Field trucks
- Forward fueling point
FROM RESOURCES TO END-USERS

PETROLEUM CAPABILITIES FOR THE NATO DEFENCE PLANNING

The following capabilities are key tools designed to meet operations requirements in the NATO Defence Planning Process. They are also used as a basis in the operational petroleum planning as well as national petroleum assets. All these capabilities comply with the STANAG 4605/AFLP-7)

Mission	Capability	Deployment Level	Capable of
Quality Assurance	Deployable Fuel Quality Assurance	Theatre level (at least one capacity per theatre) – 3rd line	Checking and certifying any type of fuel prior to being used in the Petroleum supply Chain of an operation
Receipt Storage and Deliveries	Bulk Fuel installation	Main Bulk Fuel Installation (MBFI) for APOD/Air base Theatre Logistics Base (3rd line)	Refueling aircraft and tank trucks
		Battlefield Bulk Fuel Installation (BBFI) for TLB and Land Component level (3rd and 2nd line)	Refueling ground vehicles and aircraft. Easily used as modular storage capacities
		Forward Bulk Fuel Installation (FBFI)	Flexible capability to refuel ground vehicle and rotary aircraft
Supply		All Weather Ship to Shore System (AWSSS) – theatre level (3rd line)	Unloading fuel from military or civilian ship to an integrated MBFI/BFI
		Tactical Ship-to-Shore System (TSS) for 2nd line of support	Unloading fuel from chip during the early phase of an operation
Transportation and supply	Bulk Fuel transportation	POL Transport company - theatre level (3rd line and 2nd line)	Land transportation of bulk fuels

ANNEX A TO
AJP-4.7

LAYOUT OF DEPLOYABLE FUEL HANDLING EQUIPEMENT (DFHE)

Level of control	Generic landmark	Fuel Handling Equipment designation (AFLP-7)	Generic capability
Tactical level	1st line	Module 1f –Bulk Fuel Carrying Vehicles Module 1g –Aerial Fuel Delivery Module 2a(3) –Forward BFIs Module 2b – Field Filling Plant for Small Containers	Ground delivery Air Delivery Sea Delivery Transportation Quality management
	2nd line	Module 1f –Bulk Fuel Carrying Vehicles Module 1g –Aerial Fuel Delivery Module 2a(2) –Battlefield BFIs Module 5 – Strategic water storage and fire fight assets Module 6 – anti-poll check assets	Storage Transportation Maintenance Quality management Accounting
Operational level	3rd line	Module 1b – All Weather Ship To Shore System Module 1c – Tactical Ship to Shore System Module 1d – Inland Waterway System Module 1e – Rail Tank Cars Module 1f – Bulk Fuel Carrying Vehicles Module 1g – Aerial Fuel Delivery Module 2a(1) –Main BFIs Module 3b – Cross Country Pipeline System Module 4 – Deployable quality check assets	Contracting Accounting Planning Storage Transportation Maintenance Quality management
Strategic level	4th line	Module 1a – Permanent Installation Repair Equipment Module 3a – Pipeline Repair & Bypass Equipment	Contracting Planning Quality management Financial management Invoicing Accounting Pipeline management

LEXICON OF ABBREVIATIONS

The Lexicon contains acronyms/abbreviations relevant to AJP-4(B) and is not meant to be exhaustive. Definitive and more comprehensive details are to be found in AAPs-6 and 15 respectively. New acronyms/abbreviations are being staffed for ratification within the context of this publication, and have been proposed for inclusion in the NATO Terminology Database (NTDB) and AAPs-6 and 15.

(* These acronyms and abbreviations have been proposed for inclusion in the NTDB)

ACROSS	Allied Command Operations Resources Optimization Software System
ADAMS	Allied Deployment and Movement System
AFLP	Allied fuels logistics publication
AJP	Allied joint publication
AOR	area of responsibility
BFI	Bull Fuel Installation
BFS	Bulk Fuel Strategy
Bi-SC	of the two Strategic Commands
CEPC	Civil Emergency Planning Committee
CEPS PO	Central Europe Pipeline System Programme Office
CONOPS	concept of operations
CRO	crisis response operations
DFHE*	Deployable Fuel Handling Equipment (under development)
DOS	day of supply
DRR	Defence Requirements Review
ENSEC COE	Energy Security Centre of Excellence
FCU	fuel consumption unit
FMB	forward mounting base
HN	Host Nation
HNS	Host Nation Support
HQ	Headquarters
IEA*	International Energy Agency
JFC	Joint Force Command
JLSG	Joint Logistic Support Group
LC*	Logistics Committee
LLN	logistics lead nation
LOGASSESSREP	logistic assessment report
LOGBASE*	logistic database (under development)

LOGFAS	logistic functional area services
LOGREP	logistic report
LOGUPDATE	logistic update
LRSN	logistic role specialist nation
MC	Military Committee
MCPU	Modular Combined Petroleum Unit (concept under development)
NAC	North Atlantic Council
NATO	North Atlantic Treaty Organization
NCS	NATO Command Structure
NF&LWG*	NATO Fuels and Lubricants Working Group
NDPP	NATO Defence Planning Process
NMA	NATO Military Authority
NPS	NATO Pipeline System
NRF	NATO Response Force
NSE	national support element
NSPA	NATO Support and Procurement Agency
OPLAN	operation plan
ORBAT	order of battle
OSCE	Organization for Security and Cooperation in Europe
PA	Participation Agreement
PC	Petroleum Committee
PfP	Partnership for Peace
PHE	Petroleum Handling Equipment
PSC*	petroleum supply chain
RIC*	reportable item code
SC	Strategic Command
SDP	standing defence plans
SFP*	Single Fuel Policy
SHAPE	Supreme Headquarters Allied Powers Europe
SPG	Stockpile Planning Guidance
SPM*	sustainment planning module (under development)
STANAG	NATO Standardization Agreement
TFHE*	Tactical Fuel Handling Equipment

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AJP-4.7(B)(1)